

**Remarks**

The Office Action mailed January 6, 2010, has been received and reviewed. Claims 1, 3, 5-7, and 19-21 having been amended, claims 2, 4, 9, and 18 having been canceled, without prejudice, claims 11-17 having been withdrawn, and claims 22-24 having been added, the pending claims are claims 1, 3, 5-8, 10, and 19-24. Reconsideration and withdrawal of the rejections are respectfully requested.

Support for the amendment of claim 1 may be found, for instance, at originally filed claim 4.

Support for the amendment of claim 3 may be found in the specification, for instance, at page 7, line 30 through page 8, line 14.

Support for the amendment of claim 5 may be found in the specification, for instance, at page 7, lines 16-29.

Support for the amendment of claim 6 may be found in the specification, for instance, at page 2, lines 14-24.

Support for the amendment of claim 19 may be found in the specification, for instance, at page 19, lines 3-39.

Support for the amendment of claim 20 may be found in the specification, for instance, at page 2, lines 14-24, and page 7, line 30 through page 8, line 14.

New claim 22 is supported by originally filed claim 18 and in the specification, for instance, at page 6, lines 21-22. New claim 23 is supported by the specification, for instance, at page 25, lines 13-26, and page 26, line 6 through page 27, line 2. New claim 24 is supported by the specification, for instance, at page 8, lines 21-24.

**Restriction Requirement**

The Examiner's action subsequent to the election of species should include a complete action on the merits of all claims readable on the elected species. MPEP 809.02(a). It is understood that the generic claims will be examined fully with respect to the elected species and that, if no prior art is found that anticipates or renders obvious the elected species, the search will be extended to the extent necessary to determine the patentability of the generic claims. Upon

allowance of a generic claim, it is further understood that Applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claims as provided by 37 C.F.R. 1.141.

**Amendment of Figures**

Figures 2 and 3 have been amended. Figure 2 has been amended to recite "Fig.3," and Figure 3 has been amended to recite "Fig. 2." "An amendment to correct an obvious error does not constitute new matter where one skilled in the art would not only recognize the existence of error in the specification, but also the appropriate correction." M.P.E.P. §2163, see also *Quigley v. Zimmerman*, 23 USPQ 310, 314 (CCPA, 1934) ("That amendments may be made to patent applications for the purpose of curing defects, obvious to one skilled in the art, in the drawings or written descriptions of inventions, is so well settled that we deem it unnecessary to cite authorities in support thereof.") This amendment is the correction of obvious typographical errors in the specification. It is readily apparent from the figure legends at pages 3 and 4 of the specification that Figures 2 and 3 as filed were incorrectly identified. Thus, the existence of the error is readily apparent to the skilled person, as is the appropriate correction.

**Objection to Specification**

The amendment made to page 1 of the specification to replace the paragraph cross-referencing related application addresses the first objection raised by the Examiner.

The specification has been amended throughout to capitalize recitations of trademarks.

**The 35 U.S.C. §112, First Paragraph, Rejection**

The Examiner rejected claim 21 under 35 U.S.C. §112, first paragraph, as failing to provide an enabling disclosure, because the specification does not provide evidence that the claimed biological material is (1) known and readily available to the public; (2) reproducible from the written description, e.g. sequenced; or (3) deposited. This rejection is respectfully traversed.

Applicants respectfully disagree that the *S. typhimurium* strain JSG 321, deposited with the ATCC and assigned the deposit accession number PTA-6556, is required to practice the claimed invention. Nevertheless, and solely to expedite prosecution, Applicants submit herewith the Declaration of Robert J. Maier ("the Declaration"). The Declaration establishes that (i) the deposit has been accepted under the provisions of the Budapest Treaty, (ii) all restrictions upon public access to the deposit will be irrevocably removed upon grant of a patent, (iii) the deposited strain is the same as the one described in the specification, and (iv) that the deposited strain was in the Applicant's possession at the time of filing.

Reconsideration and withdrawal of the present rejection is respectfully requested.

**The 35 U.S.C. §112, Second Paragraph, Rejection**

The Examiner rejected claims 2-5, 7, 8, 10, and 18-21 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. This rejection is respectfully traversed.

(a) The Examiner objected to claims 2 - 4 for the recitation of "the strain." Claims 2 and 4 have been canceled. In claim 3 the word "strain" has been deleted and "isolated bacterium" has been inserted therefor.

(b) The antecedent basis of the phrase "isolated bacterium" in claim 7 has been corrected by deleting "an" and inserting "the" therefor.

(c-d) Claim 2 has been canceled and claim 3 has been amended, thereby rendering moot the alleged indefiniteness of claim 3 in view of claim 2.

(e) Claim 18 has been canceled.

(f) Claim 19 has been amended to remove the language "STM 3147, STM 1538, and STM 1786."

(g) Claim 20 has been amended to revise "NiFe hydrogenase genes. . . expression of the NiFe hydrogenase gene product."

(h) Claim 21 has been amended.

(i) Claim 2 has been canceled, and claims 7 and 20 have been amended.

Reconsideration and withdrawal of the present rejection is respectfully requested.

**The 35 U.S.C. §102 Rejection**

The Examiner rejected claims 1-7, 18, and 20 under 35 U.S.C. §102(b) as being anticipated by Sawers et al. (J. Bacteriol. 168:398-404, 1986). This rejection is respectfully traversed.

Claims 1 and 6 are independent. Claims 3, 5, 7, 8, 10, and 19-21 depend, directly or indirectly, from one of the independent claims and, therefore, includes all of the features of the independent claim from which it depends. Thus, remarks that refer to one or more independent claims, whether individually or collectively, apply equally to any claim that depends from a referenced independent claim.

Sawers et al. disclose three strains of *S. typhimurium*. Strain LT2 (Z) possesses three distinct membrane-bound hydrogenase isoenzymes (termed hydrogease isoenzymes 1, 2, and 3 by Sawers et al.). Strain LT2 (A) possessed normal levels of hydrogenase isoenzymes 1 and 3, but lacked hydrogenase isoenzyme 2, while LT7 possessed normal levels of hydrogenase isoenzyme 3, but lacked hydrogenase isoenzymes 1 and 2 (Sawers et al., Abstract). Table 1 of Sawers et al. shows that each strain of *S. typhimurium* expressed hydrogenase activity.

In contrast to Sawers et al., independent claims 1 and 6 recite an “isolated bacterium . . . wherein the isolated bacterium does not express a functional NiFe hydrogenase protein.” Since Sawers et al. does not teach or suggest an isolated bacterium that does not express a functional NiFe hydrogenase protein, Sawers et al. cannot anticipate independent claims 1 and 6.

For at least these reasons, reconsideration and withdrawal of the present rejection is respectfully requested.

**The 35 U.S.C. §103 Rejection**

The Examiner rejected claim 8 under 35 U.S.C. §103(a) as being unpatentable over Sawers et al., as applied to claim 7. The Examiner also rejected claim 10 as being unpatentable over Sawers et al., as applied to claim 7, and further in view of Raettig Hansujurgen (U.S. Patent 3,651,214 A). These rejections are respectfully traversed.

Independent claims 1 and 6 have been amended to recite an “isolated bacterium . . . wherein the isolated bacterium does not express a functional NiFe hydrogenase protein.” In view

of the amendment of claim 1, claims 8 and 10 are not unpatentable over Sawers et al. or unpatentable over Sawers et al. and further in view of Raettig, respectively.

“The key to supporting any rejection under 35 U.S.C. 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious” M.P.E.P §2142. Furthermore, Section 2143.03 of the MPEP requires the “consideration” of every claim feature in an obviousness determination. To render a claim obvious, however, the Office must do more than merely “consider” each and every feature for this claim. Instead, the asserted combination of the cited art must also teach or suggest each and every claim feature. See *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974) (emphasis added) (to establish *prima facie* obviousness of a claimed invention, all the claim features must be taught or suggested by the prior art).

Claims 8 and 10 depend from claim 1, and claim 1 recites an “isolated bacterium . . . wherein the isolated bacterium does not express a functional NiFe hydrogenase protein.” The disclosure of Sawers et al. does not teach or suggest such an isolated bacterium. Raettig relates to oral administration of polyvalent vaccines containing a mixture of inactivated vaccine types. Raettig does not teach or suggest an “isolated bacterium . . . wherein the isolated bacterium does not express a functional NiFe hydrogenase protein.” Thus, Raettig does not supplement the deficiencies of Sawers et al. Since Raettig does not supplement the deficiencies of Sawers et al., the cited documents do not teach or suggest all the claim limitations. Thus, the Examiner has failed to establish a *prima facie* case of obviousness for claims 8 and 10.

Further, the Applicant respectfully disagrees with the Examiner’s assertions regarding the motivation for modifying Sawers et al. to produce the claimed invention.

For at least these reasons, reconsideration and withdrawal of the present rejection is respectfully requested.

### **Claim Objections**

The Examiner objected to claims 1, 5, and 6 for the italicized limitation “and.” These claims have been amended to delete the italicized “and” and insert a non-italicized “and” therefor.

**Amendment and Response**

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Serial No.: 10/591,203

Confirmation No.: 7327

Filed: June 22, 2007

For: HYDROGENASE DEFICIENT BACTERIAL STRAINS

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**Summary**

It is respectfully submitted that the pending examined claims are in condition for allowance and notification to that effect is respectfully requested. The Examiner is invited to contact Applicants' Representatives at the telephone number listed below if it is believed that prosecution of this application may be assisted thereby.

Respectfully submitted

By

Muetting, Raasch & Gebhardt, P.A.

P.O. Box 581336

Minneapolis, MN 55458-1336

Phone: (612) 305-1220

Facsimile: (612) 305-1228

**Customer Number 26813**

May 6, 2010  
Date

By: David L. Provence  
David L. Provence  
Reg. No. 43,022  
Direct Dial (612) 305-1005

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**CERTIFICATE UNDER 37 CFR §1.6:**

The undersigned hereby certifies that this paper is being transmitted via the U.S. Patent and Trademark Office electronic filing system in accordance with 37 CFR §1.6(a)(4) to the Patent and Trademark Office addressed to the Commissioner for Patents, Mail Stop Amendment, P.O. Box 1450, Alexandria, VA 22313-1450, on this 6 day of May, 2010.

By: Sandy Truehart  
Name: Sandy Truehart

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**ATTACHMENT - REPLACEMENT SHEET(S)**

**Serial No.:** 10/591,203

**Docket No.:** 235.01550101

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Pursuant to 37 C.F.R. §1.121(d), attached are amended Figures 2 and 3, labeled "Replacement Sheets," which replace Figures 2 and 3 in the present application.

The only changes in Figures 2 and 3 is that Figure 2 is now Figure 3, and Figure 3 is now Figure 2. No new matter has been added.